

LEGITIMATE LINES OF ANTHROPOLOGICAL RESEARCH.

AN ADDRESS

BEFORE THE

AMERICAN ASSOCIATION

FOR THE

ADVANCEMENT OF SCIENCE,

BY

PROF. DANIEL WILSON,

CHAIRMAN OF THE SUBSECTION OF ANTHROPOLOGY,

AT NASHVILLE, TENN.,

AUGUST, 1877.

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A D D R E S S
OF
PROFESSOR DANIEL WILSON,

CHAIRMAN OF THE SUBSECTION OF ANTHROPOLOGY.

LADIES AND GENTLEMEN :—

THE honor which you have conferred upon me in electing me chairman of the subsection of Anthropology, imposes on me the duty of delivering an opening address on some subject relating to the special objects of study to which your researches are directed. I greatly regret that the protracted effects of an accident from which I am still suffering, have prevented me giving the requisite time and study to the preparation of an address worthy of the subject, and of the audience to which it has to be presented. I must, therefore, throw myself on your kind indulgence, and trust that the varied character and high interest of the papers to be communicated to this subsection, will atone for all deficiencies at its opening.

By the establishment of a permanent subsection of Anthropology in the A. A. A. S., the growing importance of this attractive department of science has received a just recognition, which cannot fail to give fresh stimulus to research. In its most comprehensive aspects Anthropology includes the old-fashioned labors of the antiquary in their later development into a science of Archæology ; it embraces all that pertains to that common ground of the geologist and archæologist in the more recent strata in which man and

the traces of his primitive arts are believed to occur *in situ*; yet at the same time it deals mainly with a class of evidence peculiarly its own. The extinct life of geological periods reveals itself to the instructed eye of the palæontologist chiefly by means of the actual fossil remains. Or if to these have to be added illustrations of habits, food, structure, etc., such as are supplied by means of gnawed bones in the cave-resorts of carnivora, coprolites, footprints, and the like subsidiary evidence: still all are traceable directly or indirectly to the living organism. But with man it is otherwise. His presence is manifested as the contemporary of such ancient life, independently of all traces of his actual remains, by means of the works of his hands; and thus the study of the archæologist becomes an ingenious process of induction, when employed to determine the social habits, the culture, and the intellectual and moral characteristics, of races of men which had passed away long before the very dawn of history. But the science of Anthropology also comprehends the common ground of biology and physiology, in which man takes his place along with all other animals, as a subject of natural history. The physical structure of the savage as compared with civilized races, and of the oldest osteological traces of man with both, are legitimate subjects of investigation. Craniology, and other branches of comparative anatomy, in like manner come under review, first in the comparison of races, in reference to the diverse varieties of man; and next in the study of the analogies of the Anthropomorpha with the Anthropidæ, as represented by the single genus and species Man.

In the older classifications of the naturalist, the aim has been to determine for Man a place in the system of nature which shall give distinct recognition to his moral and intellectual, as well as to his physical attributes. The Bimana of Cuvier and Blumenbach, and other schemes of a like kind, which for the present have fallen into disfavor, had this in view. But while it is legitimate for the naturalist in treating of man as a vertebrate animal, to take into consideration his physical structure alone; it is not only not unphilosophical, to look beyond this to the psychical elements of his being; but it is indispensable, that the anthropologist ever keep in view the double nature of man. That man is an animal is unquestionable; but that he is something more is assumed in the very simple axiom which constitutes the basis of the whole argument for the antiquity of Man. The constructive instincts of

beast, bird, crustacean, insect, and zoophyte, furnish endless subjects for admiring study; yet so thoroughly is the use of tools recognized as the exclusive attribute of man, that the discovery in the glacial drift, or cave-breccia, of a single artificially fashioned flint or stone—chipped though it may be into rudest form—is sufficient to satisfy the geologist of the contemporaneous presence of man. Hence, while it is convenient to keep apart from the elements of physical structure all those evidences which relate to mental phenomena, a very inadequate conception of man must be formed if the latter are excluded from our estimate of him.

But it is one of the curious and unexpected results of the great revolution in biological science consequent on the recognition of a continuity of succession of forms of life, as based on the hypothesis of evolution, that such distinctive elements of mental phenomena as are embraced under the heads of psychology, sociology, etc., are no longer absolutely limited to man. In the comprehensive inquiries to which the novel teachings of evolution have given rise, the germs of man's intellectual and moral, as well as of his physical attributes, are being sought for in the instincts and habits of the lower animals; and the phenomena of social life which they exhibit have acquired a novel interest from their supposed bearing on the sources of highest mental and moral development.

The result of such researches tends more and more to diminish the number of characteristic attributes previously adduced as the basis of a true definition of Man. Blumenbach reduced his earlier and more comprehensive characteristics into the two very simple elements of the "*animal erectum, bimanum*." But the order of Bimana, subsequently adopted by Cuvier for the human family, is already rejected, in spite of such high authority. Owen, again,—looking to the brain as the organ of Man's grand inheritance, reason,—sought to determine for him a classification distinct from the other Primates, and from the Mammalia generally, under the term Archencephala; but the proposed sub-class, after protracted discussion among the most eminent anatomists and physiologists, has in like manner been abandoned.

It thus becomes ever more difficult to select the special characteristics which shall supply a definition exclusively applicable to Man. He has been styled the tool-using, and the tool-making animal; the fire-using animal; the cooking animal, etc. There

is one attribute which still seems to be his right; and which pertains to the source of all those differentiations. We popularly use such terms as the irrational creation, the brute creation, rational beings, etc.; accepting reason as the primary distinctive characteristic of Man. Yet even in this he is now denied an exclusive heritage; nor is it now, for the first time, that some exercise of a reasoning faculty is recognized as pertaining to the lower animals. Physically, mentally, and morally, the ground within which he has seemed to be intrenched beyond reach of encroachment by the lower orders of animate nature, seems to give way. But there remains one specialty indisputably his own. We habitually designate all other living creatures as *dumb* animals; discriminating in this between the inarticulate cries of the lower animals, and the intelligent utterances of human speech. Hence the legitimate selection of language as the most essential and unvarying index of Man. No race of men has ever been found devoid of language. No other animal has ever been known to possess language in its most rudimentary form. We have, indeed, speech in a certain sense, in the parrot, the starling, etc.; but this is no more than another phase of the capacity for imitating sounds, familiar to us in the natural imitations of the mocking bird; and dependent in part on physical structure. Neither in the one case nor in the other, are the sounds symbols of thought, or vocal signs of objects or ideas.

Hence one of the highest branches of Anthropology is the Science of Language. The researches into the sources and nature of speech, and into the Science of Language, which have been pursued by the foremost among the philologists of Europe for upwards of half a century, have opened up novel lines of inquiry not less fascinating than the most brilliant discoveries of the age. But America has its own special department in this great work, in the languages of a continent, isolated for unnumbered centuries; and left to develop its own philological characteristics uninfluenced by any of the sources which have affected the structure of languages of the Old World within the historic period.

Professor Max Müller has drawn attention to the tendency of the languages of America towards an endless multiplication of distinct dialects. Those again have been grouped by the synthetic process of Hervas into eleven families; seven for our northern continent, and four for South America. But much yet remains to

be done in this important department. One able English comparative philologist, Mr. Hyde Clarke, invites attention to a singularly fascinating line of research, in his "Khita and Khita-Peruvian Epoch." Tracing the progress of his Sumerian Race—from the union of which with the Semites he derives the ethnological peculiarities of the Jews,—he assigns an interval of four thousand years since their settlement in Babylonia and India. In like manner, on the assumption of their migration from a common centre in High Asia, which the division of Western and Eastern Sumerian in pronouns and other details is thought to indicate; it appears probable that Peru may have been reached by a migratory wave of earliest movement from four to five thousand years ago; though Mr. Hyde Clarke conceives that it is quite within compass that the same great wave of migration by which India and Babylonia were reached, continued to propagate its centrifugal force; and by its means Peru was reached within the last three thousand years.

The system of Agassiz, based on his idea of natural provinces of the Animal World, and their relation to different types of Man, favored the idea of various native American centres within which the diverse varieties of American Man originated; and from whence they had been distributed over the entire continent. This idea proved acceptable for a time to American ethnologists, advanced as it was on such high authority, and with some specially seductive arguments in its favor. But the progress of science has effected a total revolution in reference to this question. The idea of a plurality of origin, and of a number of distinct races of Men, was in harmony with the popular process of an endless multiplication of species throughout the entire animal kingdom. Hence it found favor for a time in the speculations of science, and was even dogmatically advanced as one of its indisputable truths. But already the leadings of scientific induction point in a wholly different direction, tending to the more comprehensive unity which embraces all men in the descent from a centre common to them with other animals.

It is sufficient for our present purpose to note that the abrogation of a system which recognized in the Man of America a being primarily distinct in origin from all races of the Old World, leaves us free to follow out the interesting inquiries suggested by apparent relations between the native languages of this continent and

those of ancient Asia and Africa, unencumbered by conflicting elements of scientific classification. Assuming, for the sake of argument, that a common Turanian population of Asia and America separated, let us say four thousand years ago: the phenomena exhibited in the extreme polysynthetic characteristics of many of the native languages of this continent as compared with the agglutination of the Turanian languages of Asia, furnish a subject of investigation not less interesting to American students, alike of the Science of Language, and of the whole comprehensive questions which Anthropology embraces, than the relations of the Romance Languages of Europe to the parent Latin; or of the Latin itself, and all the Aryan languages, ancient and modern, not only to the Sanskrit and Zend, but to the indeterminate stock which furnished the parent roots, the grammatical forms, and that whole class of words still recognizable as the common property of the whole Aryan family of languages. The Sanskrit was a dead language three thousand years ago; the English language, as such, cannot claim to have originated much more than fourteen centuries ago, yet both partake of the same common property of numerals and familiar terms existing under certain modifications in Sanskrit, Greek, Latin, German, Slavonic, Celtic, Anglo-saxon, and in all the Romance Languages of Europe. What has America to show, analogous to this: not only of affinity of languages within itself; but of possible relationship to languages of other continents, and of elder centuries?

Gallatin early drew attention to certain analogies in the structure of Polynesian and American languages, as deserving of careful investigation; and pointed out the peculiar mode of expressing the tense, mood, and voice of the verb, by affixed particles, and the value given to place over time, as indicated in the predominant locative verbal form. The substitution of affixed particles for inflections, especially in expressing the direction of action in relation to the speaker, is common to the Polynesian and the Oregon languages, and also has analogies in the Cherokee. We have, in truth, to deal with language as the geologist has learned to do with the earth's crust, and recover from the aggregations of the one, as from the accumulated strata of the other, the records of a long forgotten past. Subsequent observations, though hitherto very partially prosecuted, have tended to confirm the idea of elements recognizable as common in the languages of Polynesia and

America. This is specially noticeable in relation to the languages of South America, as shown in their mode of expressing the tense of the verb; in the formation of causative, reciprocal, potential and locative verbs, by affixes; and in the general system of compound word structure. The incorporation of the particle with the verbal root, appears to embody the germ of the more comprehensive American holophrasms. But here again while seeming to recover links of connection with Polynesia, it becomes apparent, as such affinities lead us to anticipate, that we are on the track of others no less clearly Asiatic. Striking analogies have been recognized between the languages of the Deccan, and those of the Polynesian group, in which the determinate significance of the formative particles on the verbal root, equally admits of comparison with peculiarities characteristic of languages of this continent. On this subject the Rev. Richard Garnett remarks, in a communication to the Philological Society, that most of the native American languages of which we have definite information, bear a general analogy alike to the Polynesian family and to the languages of the Deccan, in their methods of distinguishing the various modifications of time; and he adds: "We may venture to affirm in general terms that a South American verb is constructed precisely as those in the Tamul and other languages of Southern India; consisting, like them, of a verbal root, a second element defining the time of the action, and a third denoting the subject or person."

Such indications of philological relations outside of the American continent, are replete with interest. If the languages of South America have such affinities with the Polynesian archipelago, then also we may expect to establish a like relationship between the megalithic sculptures and cyclopean masonry of Peru, and the remarkable ancient stone structures and colossal sculpture long ago noted by Captain Beechey on some of the islands nearest the coasts of Chili and Peru; and since then recognized on others lying towards the Asiatic Continent. We thus seem to recover the trail of an ancient migration from Asia to America, of which other traces are not wanting: as in the Polynesian practice of compressing the skull, as described by Dr. Pickering, and since abundantly confirmed by the forms of Kanaka skulls. By following up the traces of this strange custom, perpetuated among the tribes on the Pacific coasts both of Northern and Southern America to our own day, we retrace the steps of ancient wanderers back-

ward through the islands of the Pacific, to Asia; and so to elder centuries when the Macrocephali of the Euxine attracted the observant eye of Hippocrates; and became familiar to Strabo, Pliny, and Pomponius Mela.

The evidences of migration from the continent of Asia to the islands of the Pacific are abundant, and some of them seemingly of no very remote date. The direct relationship of existing Polynesian languages is not Mongol but Malay; but this is the intrusive element of a time long subsequent to the growth of that linguistic element which still perpetuates traces of Polynesian and American affinities. The number and diversity of the languages of this continent, and their essentially native vocabularies, prove that the latter have been in process of development from a remote period, free from contact with languages which appear to have been still modelling themselves according to the same plan of thought in many scattered islands of the Pacific.

In attempting to recover the traces of ancient history thus indicated, the languages which seem to invite special study are the Aymara, the Quichua, and the Maya. The Quichua was the classical language of South America, wherein, according to its native historians, the Peruvian chroniclers and poets incorporated the national legends; and which occupied a place under Inca rule closely analogous to that of the Norman French in England, from the eleventh to the thirteenth century. The Maya language, which strikingly contrasts, in its soft, vocalic forms, with the languages of the nations immediately to the north of its native area, is that which Stephens tells us was affirmed by Indian traditions among the natives of Central America to be still spoken by a living race in the region beyond the Great Sierra, extending to Yucatan and the Mexican Gulf. To those ancient cultured languages of the seats of an indigenous civilization on this continent, attention must anew be directed, with all the latest appliances furnished in the new developments of the science of language. There, apparently, we have to look for an answer to many inquiries specially interesting to ourselves as occupants of this western world. If the arts of architecture and sculpture, and the hieroglyphic records with which they are enriched, are modifications of prehistoric Asiatic civilization, it is there that the evidence is to be looked for; and if the arts of the sculptor and architect were brought to this continent by wanderers from an Asiatic fatherland, then the

arts of the potter and of the metallurgist are also an inheritance from the old Asiatic hive of the nations: that long-recognized cradle-land of the human race.

In searching for the origin of the peculiar native civilization of America, Mr. Hyde Clarke employs philology as his chief guide. He takes the recently deciphered Akkad for the typical language of his Sumerian class. This he assumes to have started probably from High Asia, and to have passed on to Babylonia; while another branch diffused itself by India and Indo-China, and thence by way of the islands of the Pacific reached America. Hence in an illustrative table of Sumerian words arranged under four heads, as Western, Indo-Chinese, Peruvian, and Mexican, etc., he remarks "while in some cases a root may be traced throughout, it will be seen that more commonly the Western and American roots, or types, cross in the Indo-Chinese region." But he also recognizes another, and older influence, related to the Agaw of the Nile region, of which he discovers traces in the Guarani, Omagua, and other languages of South America; indicating evidences of more remote relations with the Old World, and with the African continent; but which he conceives to have been displaced by a Sumerian migration by which the Aymara domination was established in Peru, and the Maya element introduced into Yucatan. Those movements are assumed to belong to an era of insular and elder Asiatic civilization, during which the maritime enterprise of the Pacific may have been carried on upon a scale unknown to the most adventurous of modern Malay navigators, notwithstanding the essentially maritime character by which the race is still distinguished.

Thus the highway to the Pacific was familiar to both continents; and hence a second migration is recognized, in certain linguistic relations between the Siamese and other languages of Indo-China, and the Quichua and Aztec of Peru and Mexico. Here at any rate are glimpses of research in the prosecution of which American Anthropologists may employ their learning and acumen with results which shall reveal to us a past not less marvellous, and possessing a more personal interest, than all which geology has recovered from the testimony of the rocks. This is one of your legitimate lines of investigation, singularly fascinating in its rich promises. Already the students of science are recovering for us curious glimpses of that long-forgotten era when the parent language of the

whole Aryan stock was the tongue of an ancient civilized people, on the great plateau of Central Asia, speaking a language which was neither Sanskrit, Greek, German, nor Slavonic; but which included the dialectic germs of all. In the remote era to which this points, the parent stock of primitive Aryans had realized that fundamental idea of settled civilization which consists in property in land; had made great progress in agriculture; and as Professor Max Müller says of them, "they had recognized the bonds of blood, and sanctioned the bonds of marriage; they invoked the Giver of Light and Life in heaven by the same name which you may still hear in the temples of Benares, in the basilicas of Rome, and in our own churches and cathedrals." The same lines of research point hopefully to future disclosures for ourselves, helping us to bridge over the great gulf which separates America from that elder historic and prehistoric world; and so to reunite the modern history of this continent with an ancient past.

Many other departments of our comprehensive study might in like manner be alluded to. I might fitly refer to the undesigned, yet exhaustive ethnological experiments which are being carried out on this continent on the grandest scale. Here we witness the transference of the indigenous population of Africa, of Asia, and of Europe, to a continent where they are brought into new geographical, climatic, and social conditions. We see the African in the South, the Chinese on the Pacific, the Frenchman on the St. Lawrence, the German, the Celt, and the Anglo-Saxon, all subjected to novel influences, necessarily testing the results of a change of climate, of diet, and of social habits, on the ethnical character of each. Here too, alike in the Red and Black races, we see experiments of hybridity carried out on a scale adequate to determine many points involved in the question of the origin and perpetuation of the various races of mankind. Here, too, man can still be studied, as among the Esquimanx, in a condition closely analogous to that which is ascribed to postpliocene, if not to preglacial man. Here may still be seen races practising neolithic arts of a stone age as genuine as that of Europe's prehistoric times; on the other hand we witness influences begotten by the abrupt intrusion of the matured arts of Europe on the first crude efforts of the native savage with the virgin copper which he has learned to hammer into weapons and implements to supply his needs. Here, too, may be seen the infantile rudiments of ideog-

rathy and letters in the symbolic picturings of the Indian on his buffalo-robe or his grave post; and, beyond this the transitional stages of a written language, through the pictorial records of Mexico, the hieroglyphics of Central America, and even the first approximations to true numerals and alphabetic characters. In all this I but glance at some of the most salient points embraced within the legitimate work of this section.

It is thus apparent that the department assigned to the anthropological subsection embraces an ample and varied field in which very diverse talents and acquirements may be brought into coöperation; and made to converge by widely separated lines of thought and research, towards the common centre of great and far-reaching truths involved in the science of Man. So comprehensive a field of study demands for its elucidation the mastery of many distinct branches of science, and a comprehensive knowledge both of ancient and modern languages. The researches of the scholar in his study, of the archæologist and geologist in their field-labors, of the traveller in his far-wanderings and of the missionary teacher in his more intimate intercourse with the nations of strange lands, have all to be combined with investigations in other departments of science; while physiology, palæontology, and comparative anatomy, mineralogy and metallurgy, each contribute its quota towards the interpretation of the evidence with which the anthropologist has to deal.

But various causes have thus far combined to give to the investigations of the American anthropologist a character essentially distinct from that which has marked those of his co-laborers in Europe. In the earlier stages of research he has seemed in some respects to be placed at a disadvantage. In reality, however, as the special features which pertain to such inquiries on this continent are fully matured, it will become apparent that he enjoys many advantages, and has within his reach some exclusive facilities which may be expected to give a unique character to American anthropology. Whether our object be to study the characteristics of savage man unaffected by extraneous influences of civilized nations; to investigate the effect of the intermingling of essentially diverse races, in the production and perpetuation of new varieties; or in the improvement, degeneracy, or sterility of such hybrid stocks; to ascertain the condition of races ignorant of metallurgy; to trace the processes by which the true metal-

lurgic arts have been evolved, from the first crude working of malleable copper or lead with the hammer, to the tentative intermingling of copper and tin in the crucible, and the moulding and casting implements and personal ornaments of bronze, as well as of gold; or lastly, to follow in the steps of Humboldt, and investigate the analogies to ancient Asiatic beliefs in the mythology of the semi-civilized nations of Central and South America; the indications of correspondence in their calendars and astronomical divisions of time; or the affinities of grammar recognizable in languages of the New and the Old World: in each and all of those it will be found that we enjoy, as occupants of this continent, facilities peculiarly our own.

Our training for the work which this Anthropological subsection has undertaken, is of itself peculiar. The archæologists of Europe had been busied for centuries in the elucidation of early historic monuments; and only during the present century passed beyond that stage to a study of the ruder traces of primitive art, and of the physical characteristics of unhistoric, if not prehistoric races. The researches directed to the elucidation of the problems thus originated were followed up through medieval, classical, Assyrian, Indian, and Egyptian remains, to the very threshold of that prehistoric period which forms the debatable land between geological and historical epochs. Indeed, not the least significant fact in reference to the remarkable disclosures of the past quarter of a century is that some of the most characteristic drift implements, such as the flint spear-head found alongside of a fossil elephant's tooth, in the vicinity of Gray's Inn Lane, London; or the large flint implements of the same type from the drift of the Waveney Valley, at Hoxne in Surrey, underlying similar fossil remains, had been brought under the notice of archæologists, and deposited in the British Museum, upwards of a century before the idea of the contemporaneous existence of Man and the mammals of the drift found any favor.

The conception of the comprehensiveness even of historical antiquity was long hampered in Europe by a too exclusive devotion to Greek and Roman remains; or by profitless efforts at the interpretation of the more ancient monuments of Egypt; but the historical relations of this continent with the Old World, are so recent that for us the fifteenth century is its historical dawn; and anything dating before the landing of Columbus has till very recently

seemed to be inconceivably ancient. Hence antiquarian speculations and historical research have been almost exclusively occupied on matters of a very modern date; and great industry has been often profitlessly expended in attempts to establish derivative relations between the sculptures and hieroglyphics of Central America, Mexico, and Peru, and those of ancient Egypt. But in this, as in so many other departments of the archeology and ethnology of the New World, we want facts rather than theories. Much has been done in recent years to add to our knowledge of the antiquities of Central America and Peru. Forbes, Markham, Agassiz, Hutchinson, Squier, and others, have made important additions to the evidence required. Nevertheless even now it is a moot point whether Central America has not yet to disclose, not only still more remarkable ruined cities than any that Stephens revealed, but even inhabited cities where a native civilization is still in progress.

But the all-absorbing theme of archaeological inquiry at present embraces the evidence of the antiquity of Man. The palaeolithic disclosures of the French drift, belong to our own day; and though the researches of Mr. MacEnery in the famous Kent's Hole Cave had, fully half a century ago, brought to light true palaeolithic flint implements in the same red loam with the bones of the Mammoth, Tichorhine Rhinoceros, Cave Bear, and other extinct mammalia, it is only now that the true significance of the disclosures of the ossiferous caves of Europe is being understood. America was indeed little behind Europe in the earlier stages of cave research, for it is now upwards of forty years since Dr. Lund and M. Claussen recovered from limestone caverns in the Brazils, the remains of Man alongside of many fossil bones of extinct mammals; and—with special significance in relation to more recent speculations—including those of extinct genera of fossil monkeys.

It is not necessary that I should now detail the isolated and dubious illustrations of American palaeolithic art which have thus far rewarded zealous research. Flint implements from the auriferous gravel of California were produced at the Paris Exposition of 1855; and have since been described among the disclosures of the drift in Illinois, Georgia, and California. Still more, from the auriferous drift of the latter state there has been produced to you in previous years, not only a highly polished stone plummet, but

the far more startling disclosure of a complete human skull. I shall not now enter on a discussion of the scientific value of such evidence. Chance—found, isolated examples of flint implements must ever be received with caution, as evidence of palæolithic art, on a continent where the indigenous population have not even now ceased to manufacture tools and weapons of flint and stone. The striking feature of archaeological exploration in Europe has been that the tool-bearing drift has been determined by its geological characteristics; and the traces of Palæolithic Man are now sought for with the same confidence as the well recognized fossils of any geological strata.

To this same stage of geological and archaeological systematic research we have now happily arrived in America; and I may presume that at your present meeting an opportunity will be afforded of judging of the significance of the highly suggestive discovery of Dr. Chas. C. Abbott, in the drift of the Delaware River Valley, at Trenton, New Jersey, already produced in the Report of the Peabody Museum of American Archaeology and Ethnology for the present year. You have there set forth the discovery of data from which it is assumed that man may be shown to have existed on this continent during the process of formation of the great gravel deposits, now ascribed to glacial action, which extend from Labrador as far south as Virginia, and are but one of the many indices of the Ice Age of this Western Hemisphere. The great importance which attaches to the discoveries now referred to, is due to the fact that they are the result of systematic research, based on the scientific analogies of European archaeology. The locality selected for this investigation is the valley of the Delaware, at Trenton, N. J. There Dr. Abbott has found, *in situ*, rude stone implements formed of a granular argillite, which he believes "were fashioned by man during the glacial period, and were deposited with the associated gravels as we now find them." The implements are of peculiar form, due in part to the material of which they are fashioned. To the most characteristic of these Dr. Abbott gives the name of the "turtle-back celt." But besides this class of rudely chipped stone implements, were also discovered one or more flint spear-heads, to which a like antiquity is ascribed. Judging from its material, size, and configuration, as indicated in the published report, the question of the contemporaneous origin of the figured spear-head appears to me to require

careful consideration. Assuming, however, that the whole evidence will be submitted to the section, it is sufficient that I now refer to a subject which cannot fail to receive adequate attention from those best qualified to determine the true significance of the evidence adduced.

It is an event which may be hailed as a good omen for this anthropological department of the scientific work of the Association, that the Peabody Museum of American Archaeology and Ethnology is able to produce such practical fruits of the wise patronage which it is enabled to extend to archaeological research. We are but on the threshold of this young science, pregnant with marvellous disclosures relative to the history of man. Let us not be hasty in the acceptance of crude theories, nor rash in the needless overthrow of old way marks in the progress of knowledge. There is a danger at the present stage, of our becoming enamoured of theories just in so far as they conflict with hitherto received opinions, or charm by reason of the vastness of their assumptions. Opinion is advancing with rapid strides. There is a danger that fancy shall far outspeed fact. I can remember the time when, in the British Association for the Advancement of Science, the idea of races in Britain prior to the Celts, was scouted with scarcely disguised contempt. Now the tendency is to look upon the assumed traces of fossil man in the Tertiary deposits, as comparatively recent. On any hypothesis of evolution which includes man they must indeed be so; for the most ancient well-authenticated human crania thus far discovered help us in no degree to the recovery of any anthropomorphic stage of intermediate transition from lower forms of life. The Cromagnon skulls of the French Reindeer period exceed, rather than fall short of the cerebral capacity of the average modern Frenchman; nor is the famous Neanderthal skull, with its enormous superciliary arches,—so suggestive of analogy to the anthropoid apes,—by any means deficient in indications of cerebral development. We stand in need of ampler evidence, not of more comprehensive hypotheses. The latter cannot be received with too great caution. Our duty is, while honestly and fearlessly accepting whatever evidence may offer, and following out the leadings of truth to whatever results they may tend, to carefully guard against the adoption of hasty assumptions. We have first to establish beyond all doubt the facts of science; we must next be sure that our inductions follow logi-

cally from such premises. The construction of startling hypotheses is at no time a matter of difficulty. It is otherwise with the patient, diligent accumulation of all the evidence on which a sound scientific induction can alone be based. The truths which we are now in search of specially demand from us the elimination of all uncertain, still more, of all spurious or misleading elements. Truth, whatever it may be, must triumph in the end ; and whatever tempts us to neglect the calm, philosophic spirit of inductive research will only retard that triumph. The work before you for years to come must be the accumulation of evidence, the cautious sifting of it in all its bearings, and the ascertaining what its teachings really are. The work which has thus to be done is laborious ; but the truth when finally established will bring with it its own abundant reward.

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